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Evaluation of recellularization on decellularized aorta scaffolds engineered by ultrasonication treatment (Conference Paper)

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Abstract

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Aortic scaffolds prepared using sonication decellularization treatment has provided a successful medium for repopulation with vascular smooth muscle cells (VSMCs). The objective of this study is to explore the potential of tissue decellularization using ultrasonication treatment and its recellularization before implantation of the cell-seeded scaffolds into host. Aorta tissue samples are decellularized in 2% SDS with sonication for 10 hours and compared with the native tissues. The 4′,6-diamidino-2-phenylindole (DAPI) staining was used to evaluate the decellularization and Hematoxylin-Eosin (H-E) staining was used to compare the VSMCs infiltrations onto the decellularized tissues at day-0 and day-6 after cell-seeding. The results histologically showed complete DNA removal from scaffolds after decellularization and subsequent recellularization resulted in successful VSMCs infiltration. Accordingly, the decellularized tissues treated with 2% SDS in sonication demonstrated successful VSMCs repopulation afterward and is speculated to have less toxicity and able to be effectively implanted into host. © 2017 IEEE.

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